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3

EFFECT OF FEDERAL LAMB AND MUTTON GRADES ON PRODUCER AND CONSUMER PRICES

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U.S. DEPARTMENT OF AGRICULTURE

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PREFACE

Early in 1959 several groups in the sheep industry asked the Department of Agriculture to suspend Federal grading of lamb on the grounds that it was hurting rather than helping the marketing of lamb and mutton. Much controversy over discontinuance or revision of the Federal grade standards continued through 1959 and culminated in public hearings before the House of Representatives Committee on Agriculture in January 1960.

At the conclusion of the hearings the committee recommended that Federal grading of lamb and mutton be continued without interruption. It also recommended that the Department and lamb producing, distributing, and consuming interests should make a renewed effort to work out satisfactory standards. Grade standards for lamb and mutton were subsequently revised effective March 1, 1960.

In transmitting the committee resolution to the Secretary of Agriculture, the chairman requested that the Department of Agriculture make a study of the effect of Federal grading of lamb and mutton on producer and consumer prices. It was suggested that the revision of the standards itself would facilitate such a study of the effect of grading on prices.

Prof. Darrell F. Fienup, Department of Agricultural Economics, University of Minnesota, was appointed to head a team of research workers which included William C. Motes, Stephen J. Hiemstra, and Robert E. Laubis, all of the Economic Research Service of the Department. This research was carried on under the general leadership of Gerald Engelman, also of the Economic Research Service. At the initiation of the research, and at several times during its course, the Department drew upon a group of consultants from agricultural economics departments of several land-grant universities for advice and counsel on approaches to the study and interpretation of findings. The group included Prof. Clive R. Harston, Montana State University, John G. McNeely, Texas A. & M. College, Willard F. Mueller, University of Wisconsin, and Willard F. Williams, Oklahoma State University.

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EFFECT OF FEDERAL LAMB AND MUTTON GRADES ON PRODUCER AND CONSUMER PRICES

SUMMARY

For more than three decades the Department of Agriculture has offered a Federal grading service for lamb and mutton carcasses. During recent years about two-fifths of all the lamb and mutton produced in the United States was federally graded. The service is voluntary. It is provided only when requested and its cost is paid by those who use the service.

Lamb has been experiencing a declining demand. Per capita consumption of lamb declined from 7 pounds per year prior to 1945 to a 4- or 5-pound annual average since 1950. The period since 1958 has been one of depressed prices. In 1959, some of the western sheep producer organizations asked that lamb grading be abolished because they believed it was contributing to the adverse economic conditions in the industry. The subsequent change in grades in 1960 lowered the quality requirements for the Prime and Choice grades.

A survey showed that most retailers favor Federal grading and use grades either directly or as a frame of reference. U.S. Choice is a label of high reputation in merchandising lamb. Lamb consumption is heavily concentrated in the northeast and Pacific coast areas. In the West, lamb is mostly federally graded and sold through retail food chains. In the East, most lamb is sold unbranded, although some is sold under private brands and some under Federal grades. Small retailers, including kosher outlets, are more important in the East.

Wholesalers favor Federal grading and use it as a quality standard in both buying and selling. Federal grading is especially important in their sales to hotels, restaurants, and institutions.

Packers with national distribution systems slaughter more than three-fifths of all lambs. These packers generally opposed lamb grading. In many areas, especially on the west coast, independent packers have become increasingly important. Most of these depend heavily on Federal grading and are strong supporters of continuing the service.

Lamb is a small volume item for most retailers, and in-store policies regarding lamb are greatly influenced by policies used for larger volume meats. Much of the lamb is sold during special sales. Many retailers can move lamb in volume only during a special sale.

Price analysis suggests that factors other than grading were responsible for the recent price decline. Lamb prices are more affected by changes in the supply of beef than by changes in the supply of lamb. Prices have also been affected by the increasing production of other substitutes and a steadily declining demand for lamb.

Federal grades have their own price effects. They promote competition among buyers, among sellers, and between buyers and sellers. They facilitate trade and lower marketing costs. Both of these forces tend to prevent packers and retailers from widening margins at the expense of their suppliers and consumers. The consistent availability of a standardized product tends to increase consumer acceptance. Federal grading helps the pricing system direct production by rewarding the producers of desirable lambs relative to those producers of lambs that are less desirable from the consumer's point of view. Although Federal grading does not affect all segments of the lamb industry equally, or even favorably, the net impact appears to be favorable from the public interest or overall industry points of view.

FEDERAL GRADES FOR LAMB AND MUTTON

For 40 years the U.S. Department of Agriculture has engaged in the development of grade standards for meat animals and meat. For nearly as long, it has also performed a grading service for beef, veal, and lamb. Grading of meat has been voluntary except during World War II and the Korean conflict, when it was compulsory. It is provided on request from a processing or merchandising firm. Its cost is paid by the firm.

Grading is a process of sorting, or selection. Both livestock and meat are produced in a wide range of kind and quality. This heterogeneity is acceptable to neither the meat trade nor the ultimate consumer, both of whom want some uniformity in product. Federal grading sets up uniform classes designed to meet that need.

Federal grading has proved particularly useful to the wholesale and retail meat trade as it has developed mass meat merchandising. Since the war, supermarkets have undertaken to handle vast quantities of meat in highly systematic operations. A standard set of grades facilitates this kind of merchandising. Federal grades provide a more accurate, common language for trading at the wholesale level. Buying and selling are easier when a uniform language is used. Specification buying, usually done by telephone, is much more economical than negotiating purchases on the basis of inspection of individual carcasses.

To be of value a set of grade standards for meat must accommodate the needs of important segments of the trade. Accordingly, they must reflect distinctions that the trade finds to have meaning. To a large extent, these derive from preferences of consumers. Moreover, for a grading service to fulfill its purposes, it must be used. More than half of the beef sold fresh, and about half of all beef, is federally graded. A smaller proportion of all lamb—about two-fifths—is federally graded.

The lamb-grading problem

Lamb grading presents unique problems not faced in the grading of beef. Nearly half of the lambs slaughtered are western lambs, bred primarily for their ability to utilize sparse ranges or mountain pastures and for their production of wool. This is analogous to the situation that would result if half the fed cattle slaughter showed evidence of dairy rather than beef breeding. Dairy animals or dairy crossbreds not kept for milk purposes are usually sold for veal without being fattened. Thus, only a minor proportion of fed cattle market-

ings are fattened dairy-type cattle. Wool-type lambs, or lambs showing a predominance of wool-type breeding, are fattened in order to maximize returns from both wool and meat.

The other half of the lambs marketed are bred primarily for meat production. Federal standards were designed on the basis of meat characteristics. A smaller proportion of western lambs, relative to native lambs, grade U.S. Prime and Choice without feedlot fattening. Therefore, a high proportion of wool-type lambs are grain fed in an attempt to reach the quality level of the Choice grade.

Many western wool-type lambs do not readily meet conformation standards. In order to attain a high grade they must compensate by superior meat quality, which can be attained only by extended feeding. Some lambs did not meet quality standards for U.S. Choice before the 1960 change, even after prolonged feeding. Instead, objectionable deposits of external fat were added. Many lambs were heavily discounted in price for being overweight. The attempt to feed and market wool-type lambs according to grade standards designed to fit meat-type lambs resulted in serious problems. Many feeders were disappointed when their highly fed lambs failed to grade Choice and/or were discounted for weight.

One recourse was to seek either a change in the grade standards or the ending of the lamb-grading service. Pressure for either or both increases whenever economic conditions in the sheep and lamb industry are unfavorable. During the price declines of 1958–60 both alternative actions were advocated. After a period of uncertainty, grade standards were revised by the USDA effective March 1, 1960.

Changes in the standards had the effect of widening the Prime grade, and of lowering the quality level for the Choice grade. Many lambs lacking the conformation necessary to qualify for the former Choice grade without grain feeding now fall within the relaxed standards for that grade. One premise underlying the change in grade standards was that less incentive would thereafter be found for overfinishing wool lambs of deficient body type. On the other hand, depreciating the Prime and Choice grades could conceivably be harmful to producers of high quality lambs that can readily satisfy the more rigorous standards and to feeders who find that less of their services are required.

The lamb-grading controversy

The sheep and lamb industry has faced serious economic problems in recent years. Per capita lamb consumption declined from an average of 6.2 pounds in the forties to 4.3 pounds in the fifties (fig. 1). In spite of reduced production, lamb prices have declined. In 1959, members of a number of organizations in the sheep and lamb industry took the position that Federal grades for lamb and mutton were contributing to the adverse economic conditions of the industry.

Opposing positions on Federal grading stemmed from conflicting interests within the industry. Among packers, independents generally favored Federal grading because it improves their market position. The national packers who have brand names of their own generally opposed it. Western producers advocated changing or discontinuing Federal grading while producers of native lambs did not.

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The wholesale and retail trade generally was favorable to Federal grading. Organized groups of retailers, wholesalers, institutional buyers, and consumers stressed the value of Federal grading in their operations.

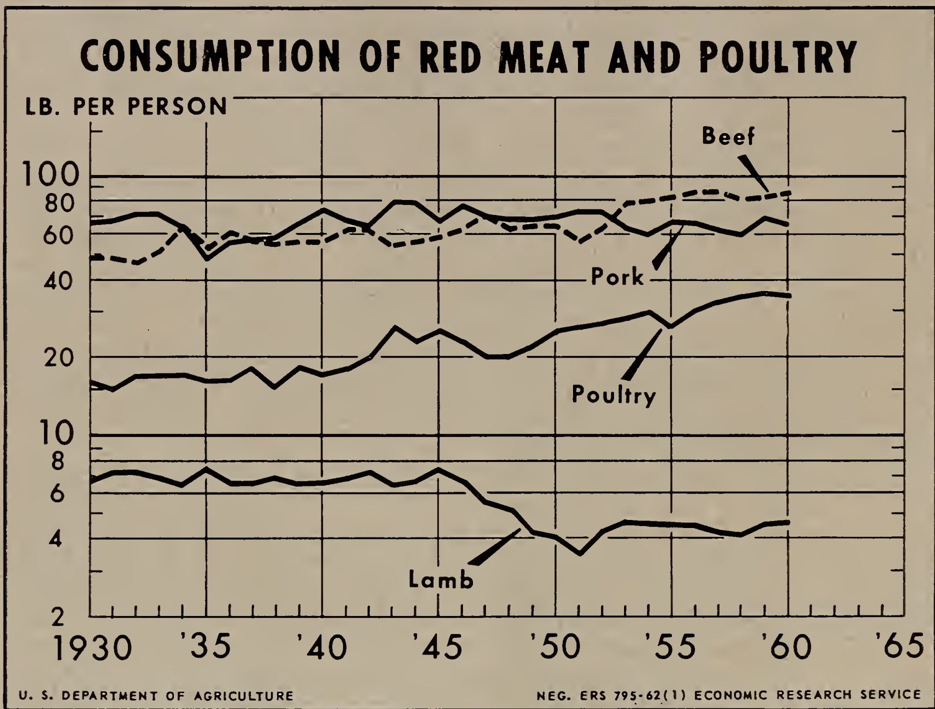

FIGURE 1

This study by the ERS, arising out of the 1959 controversy is based on interviews with a number of firms and farmers in the lamb and mutton industry plus an examination of available secondary data. Interviews were made from December 1960 to February 1961. The 40 packing firms which accounted for more than 90 percent of the lambs slaughtered in 1960 were contacted along with 33 important wholesalers and 158 retailers, including the 10 largest corporate chains and a proportional sample of other retail firms handling lamb in certain selected cities.

STRUCTURE OF THE LAMB AND MUTTON INDUSTRY AND THE USE OF FEDERAL GRADES

Retailers

The consumption of lamb is heavily concentrated in two areas of the country and in a small number of ethnic groups. In 1954, the northeast and Pacific regions consumed 73 percent of the domestically produced lamb.[1] The States of California and New York together consumed 45 percent of the total (fig. 2). Texas produced nearly 10 percent of the total lamb and mutton but consumed less than 2 percent. The Midwest and Mountain States are major producers of lamb but they consume little of it. The Southern States, likewise consume little lamb.

[1] Doty, H. O., Jr. "Distribution of Lamb and Mutton for Consumption in the United States," U.S. Department of Agriculture, AMS-93, February 1956.

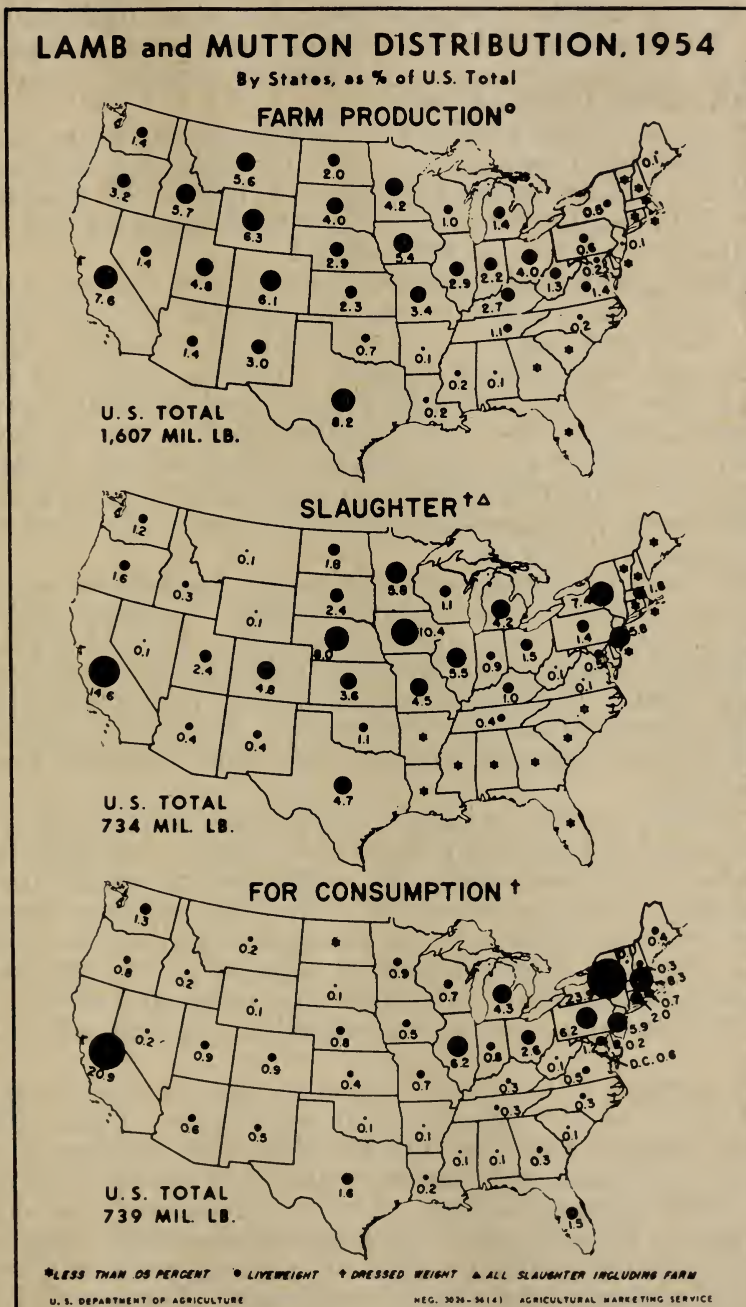
LAMB and MUTTON DISTRIBUTION, 1954
By States, as % of U.S. Total
FARM PRODUCTION°
U. S. TOTAL
1,607 MIL. LB.
SLAUGHTER†△
U. S. TOTAL
734 MIL. LB.
FOR CONSUMPTION†
U. S. TOTAL
739 MIL. LB.
*LESS THAN .05 PERCENT
° LIVEWEIGHT
† DRESSED WEIGHT
△ ALL SLAUGHTER INCLUDING FARM
U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FIGURE 2

For only a few retailers does lamb constitute more than 10 percent of red meat sales. In the stores surveyed, 1960 lamb volume per store averaged 42,000 pounds annually in New York City and 43,000 pounds in Los Angeles compared with less than 9,000 pounds in Omaha. Because of its relatively minor importance in many retail stores, lamb procurement and merchandising practices often are determined by those of other meats.

The effects of Federal grading are more discernible in the two areas of concentrated lamb consumption. Nearly all lamb sold by retailers of all sizes in Los Angeles and San Francisco is federally graded (table 1). New York retailers buy half of their lamb ungraded and the rest either federally graded or packer branded.

The differing lamb-grading policies adopted by retailers on the east and west coasts are related to the organization of their respective markets. The west coast is characterized by a rapidly expanding population and food-retailing system. Growing local and regional chains in California have relied on Federal grade standards as aids to procurement and many have established reputations by merchandising U.S. Choice. Further, the large number of independent meatpackers in the area rely on Federal grades in competing with national packers. As a result the use of Federal grades in San Francisco and Los Angeles is nearly universal (table 1).

The east coast expansion has been slower. Established retail firms primarily use packer brands or private labels. National packers account for most of the lamb sold at wholesale. Federal grades have been used to some extent but have not dominated the market as they have in the West. The largest retailer in the United States is located in the East and has a private label policy. New York retailers buy half of their lamb ungraded and the rest either federally graded or packer branded.

Over one-half of the retailers interviewed used Federal grade standards either directly or as a frame of reference. Retailers say that Federal grades provide a reliable and uniform set of quality standards for minimizing procurements costs. They are used in comparing alternative prices and qualities over a large area and a large number of suppliers. Their use in price reporting, together with weight specifications, provides standardized information to buyers and sellers. They facilitate the prevailing practice of telephone ordering directly from packers.

Over 95 percent of the lamb volume at retail was reported in the retail survey to be U.S. Choice or its equivalent. These estimates are biased upward, but they indicate that most retailers prefer to handle only one grade, and that many feel U.S. Choice or its equivalent best suits consumer desires. This is particularly true since the 1960 change in Federal grade standards. Before the change, many retailers felt top Good lamb was about as acceptable as Choice for quality, and preferable for yield of retail cuts. The new U.S. Prime consists mainly of the old top Choice grade. The supply of lamb marked Prime has increased. Yet few retail firms prefer Prime over Choice. U.S. Choice became a more acceptable grade to the majority of retailers interviewed.

TABLE 1.—*Percentages of lamb that was U.S. graded, packer branded, or unbranded, sold by retail firms in selected cities, 1960*

[In percent]

Location	All firms			By number of stores operated per firm								
				11 or more			2 to 10			1		
	U.S. G. & R.[1]	P.B.[2]	Un-branded[3]	U.S. G. & R.	P.B.	Un-branded	U.S. G. & R.	P.B.	Un-branded	U.S. G. & R.	P.B.	Un-branded
San Francisco	96.4	3.5	0.1	96.1	3.9	0	100.0	0	0	94.9	0	5.1
Los Angeles	96.3	3.2	.5	96.3	3.5	.2	96.4	.3	3.3	88.6	11.4	0
New York	25.5	25.1	49.4	23.8	25.3	50.9	76.5	19.9	3.6	36.2	17.0	46.8
Boston	12.3	65.8	21.9	14.1	60.3	25.6	1.0	98.6	.4	19.7	52.0	28.3
Miami	99.7	0	.3	100.0	0	0	100.0	0	0	79.9	0	20.1
Omaha	60.7	21.9	17.3	97.2	2.8	0	43.4	56.6	0	10.0	6.3	83.7
Total, 6 cities	48.8	22.2	29.0	47.3	21.6	31.1	68.5	29.6	1.9	53.6	17.2	29.2
10 largest chains	44.1	20.8	35.1	49.4	19.8	30.8	----	----	----	----	----	----
Total sample	48.9	21.2	29.9	48.2	20.8	21.0	68.5	29.6	1.9	53.6	17.2	29.2

[1] U.S. graded and rolled.
[2] Packer branded.
[3] Neither rolled with U.S. grade nor carrying packer brand.

U.S. Choice is being merchandised as a brand name of high repute. Often its use on lamb is coordinated with the firm's beef-grading policy. This gives the firm economies in advertising and presents a consistent image of the firm without restricting it to a single supplier. U.S. Choice was reported by some retailers to command a price premium over comparable quality products graded in other ways. Never was it selling at a discount.

Wholesalers

Wholesalers account for a sizable part of the lamb market only in New York City where they sell one-third of the lamb sold at wholesale. Large retail food chains in New York obtain most of their lamb directly from packers but they utilize wholesalers as an auxiliary source of supply. Among smaller retailers the wholesaler is the primary source of supply.

Wholesalers tend to make all of their purchases from two or three suppliers. They sell to only one or two kinds of outlets so they can specialize in the quality and service their customers require. Some of the functions wholesalers perform are: (1) Providing local coolers for holding fresh meats; (2) breaking carcasses into wholesale cuts; (3) segregating qualities wanted by various outlets; (4) boning meat; (5) packaging cuts, particularly for hotels, restaurants, and institutions; (6) providing credit; and (7) delivering merchandise. Their efficiency in performing these functions is illustrated by the growth in number of wholesalers. Their existence is owed to their ability to perform services not available elsewhere.

Wholesalers generally view Federal grading for lamb as beneficial in establishing a quality standard usable directly or indirectly in both procurement and sales. Many use Federal grading in selling to improve their competitive position or to protect themselves in quality disputes with customers. In procurement they use Federal grading as an assurance of quality. All wholesalers interviewed bought at least some federally graded lamb.

Several other factors promote the use of Federal grading in all wholesale markets. Federally graded meats are virtually essential for sales to hotels, restaurants, and other institutions. This was true to an important degree in all three market areas.

Packers

Historically, the lamb-slaughtering industry has been heavily concentrated in the few large firms which owned the large plants.[2] However, their share of total lamb slaughter is being reduced by large independent packers, many of whom have been in operation only a few years. These independent firms are near major markets on both the east and west coasts where they sell most of their output. Three large eastern independents who slaughtered 5 percent of total U.S. commercial lamb slaughter in 1950 increased their share to 7 percent in 1960. Three large western independents increased their share of total commercial lamb slaughter from 1 percent in 1950 to 5 percent in 1960. The U.S. market share of the 14 largest independent lamb killers in 1960 was 20 percent, a rise from 9 percent in 1950. Three of the fourteen firms began killing lambs during this period.

[2] Federal Trade Commission. "Unfair Practices in the Meat Industry," hearings before the Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary. U.S. Senate, May 10, 1957, pp. 261–265.

The importance of large independent lamb slaughterers is largely confined to the northeast and Pacific coast areas. In three other areas national packers still slaughter most of the lambs (table 2).

While national packers compete with independent packers in the East and West, they compete almost exclusively with other national packers in several very important lamb-slaughtering areas. National packers account for all of the commercial lamb slaughter in the west-north-central region (the most important lamb-slaughtering region), more than three-fourths in the mountain region, and nearly two-thirds in the west-south-central region. These areas together account for more than half of the U.S. total lamb slaughter.

The Pacific coast, a major lamb-consuming area, is almost self-sufficient in production. Lamb produced in the rest of the United States tends to move to the East. The national packers east of the Rocky Mountains supply about 70 percent of this lamb.

TABLE 2.—*Consumption and slaughter of lamb by areas, 1960*

[In percent]

Area	Percentage of U.S. total		National packer's share of commercial sheep and lamb slaughter in each region [1]
	Consumption of lamb and mutton	Commercial slaughter of sheep and lambs	
Northeast	50	16	27
East North Central	15	13	39
West North Central	3	30	100
South	3	(2)	66
West South Central	2	8	62
Mountain	4	14	78
Pacific	23	19	35
United States	100	100	63

[1] Armour, Cudahy, Dubuque, Hormel, Hygrade, Morrell, Rath, Swift, Wilson.
[2] Less than 1 percent.

Some firms attempt to protect and enlarge their share of the market by branding their products and developing consumer attachment to their brand. Because this is an expensive and long-term procedure it severely handicaps firms entering the market. In markets where customers are strongly attached to private packer brands, firms that lack the resources to establish their own brands compete at a disadvantage. If packer branding were the sole indicator of quality, competition would be restricted even though actual differences between products might be small.

Two factors have attenuated the advantage packers gain by private brands. First, retail chains have become formidable competitors in bargaining. They can convey images of quality without relying on packer brands. Second, Federal grades are not a private franchise but are available to all packers. Independents can use them to compete effectively with national packers who prefer to maintain their private brands.

Packers indicate that about 44 percent of the lamb they sell to large retail chains is federally graded (table 3). Of lamb sold by packers to all outlets, only 28 percent is federally graded. This indicates that a higher proportion of sales to other retailers than chains is not federally graded.

TABLE 3.—*Percentage of lamb and mutton sales by packers moving through various outlets, 1960*

Outlets	U.S. total	By class of packer			By area					
		National	Large Independents	Small	Northeast	East North Central	West North Central	West South Central	Mountain	Pacific
Large retail chain	42	40	41	34	36	33	26	26	38	50
Other retailers	24	25	32	29	36	15	24	10	5	32
Packer branch houses	[1] 0	[1] 0	0	0	3	17	16	48	9	3
Wholesalers	29	30	22	30	24	29	31	14	46	9
Hotels, restaurants and institutions	5	5	5	7	1	6	3	2	2	6

[1] Not shown separately.

Of the national packers' lamb sales to chains, 39 percent is federally graded, but large independents (including the eastern kosher killers, who use little Federal grading) grade 49 percent of their sales to chains and small independents 72 percent.

Packer branding is substantial for national packers—40 percent of sales to chains and 52 percent of all sales. It is of minor importance for all independent packers, large and small (table 4).

TABLE 4.—*Percentage of lamb and mutton sales by packers that was federally graded, branded, or unbranded, 1960*

Item	U.S. total	By class of packer			By area					
		National	Large Independents	Small	Northeast	East North Central	West North Central	West South Central	Mountain	Pacific
All lamb sales:										
U.S. graded and rolled	28	21	45	58	3	32	18	12	31	81
Packer branded	39	52	3	4	20	29	62	53	19	11
Unbranded	33	27	52	38	77	39	20	35	50	8
Direct sales to chains:										
U.S. graded and rolled	44	39	49	72	4	25	20	47	54	95
Packer branded	26	40	1	1	12	27	59	43	23	3
Unbranded	30	21	50	27	84	48	21	10	23	2

The competitive position of packers relative to each other and the nature and structure of the market in which they sell tend to determine the grading policy followed. Independent packers in California have established policies of federally grading a large prpoortion of their slaughter to meet retailer demand and to counteract the brand names of national packers. Most are specialized lamb slaughterers with no established brand names of their own. Moreover, even though they sell most of their product locally, they believe that Federal grading gives them the alternative of selling outside the west coast, and thus improves their bargaining position relative to both national packers and retail chains.

The eastern market presents an entirely different situation. Here, the national packers are dominant with 70 percent of the supply. Only 27 percent of the lamb is federally graded. Private brands are actively promoted while Federal grades are deemphasized. Federally

graded lamb is supplied only when specifically demanded and often at a higher price. Many retailers reported that the benefits of handling and merchandising federally graded lamb did not overcome the problems of price and restricted supply. The major retail food chains in the Northeast purchase federally graded lamb when they can at prices they feel are competitive but do not rely exclusively on Federal grades. Consequently, little competitive pressure exists for smaller chains and other retailers to follow the leader in handling Federal grades. Also, a greater proportion of the lamb is sold by small retailers who often are not able to keep up to date on lamb quality and prices. They tend to accept the quality and prices of lamb they are offered by their regular supplier rather than shop around.

Another factor that significantly reduces the demand for Federal grading in the Northeast is the kosher market. With only one exception all the major packers in the Northeast kosher-kill all lambs that will qualify. The kosher market takes only the foresaddle, leaving the hindsaddle, including the loin and legs, to be marketed through other channels. Restrictions on the amount of time allowed between slaughter and retail sale require some kosher lamb to leave the cooler before it is firm enough to grade. Kosher lamb is usually sold through small, specialty retailers who select personally the meat they sell and are not willing to rely on either Federal grades or packer brands. Independent eastern packers sell over three-fourths of their lamb unbranded.

PRICE AND DEMAND FOR LAMB

The price at which any given quantity of lamb can be sold reflects the price of various substitute products, incomes of consumers, and various other market forces. These include the organization and coordination of buyers and sellers within the local market and their contact with a larger national market. Information plays a part in this coordination. Federal grading is a method of stratifying products on the basis of quality. Buyers and sellers of federally graded lamb have more information with which to make decisions.

Since it was alleged by some groups during the 1959 controversy that Federal grading depresses farm prices of lamb, it is necessary to examine the important factors that affect lamb prices. Multiple correlation price analysis was used for this purpose. Results from such a study were not expected to be definitive enough to measure price effects of Federal grading, even though a change in grading standards took place during the period. Rather, the results might show whether other economic forces have been responsible for the broad price and quantity changes in the lamb market. This analysis places the role of Federal grades of lamb and mutton in better perspective.

In addition to the variables that can be quantified in a price analysis, certain other aspects of lamb production, processing, marketing, and consumption influence the use and acceptance of Federal grading and the interpretation of price response data. These features of the lamb market distinguish it from the market for beef and other substitute products. They account for some of the problems in the lamb industry. Some of them are examined briefly before turning to the results of the price analysis.

Distinctive attributes of lamb

Lambs from different regions yield substantially different types of product. Much of this variation is seasonal as different areas provide the bulk of the supply as the season progresses. Milk-fed spring lambs come to market first, followed by grass-fed range and native lambs. Grain- and alfalfa-fed western lambs are marketed toward the end of the season. While native lambs are principally bred for blocky, compact bodies, western lambs were developed for their strength and stamina and for their wool. The variation in body characteristics of these different types of lambs makes difficult the application of a single set of uniform quality standards.

The demand for lamb differs sharply for different parts of the carcass. The leg and loin appeal strongly to many consumers while the rest of the carcass is difficult to sell (except on kosher markets where the foresaddle is sold exclusively). Further, ground lamb is costly to prepare and sells slowly on most markets. The result is a wide spread in prices among various cuts. Loins and legs carry high prices to cover most of the cost of the carcass plus handling costs and profit.

Very little lamb is used as a raw material for processed meat products, in spite of low retail prices on part of the lamb carcass. Most mutton on the other hand, is boned and moves into processing outlets; very little is sold fresh. Processing outlets that might use lamb are usually filled by mutton at lower prices. The greatest opportunity for brand identification for meats is in processing. A lack of such outlets for lamb deprives the industry of this profitable alternative enjoyed by competing meats and limits the potential for demand creation. In the past, processed lamb and mutton have been used principally as minor ingredients of chili, stew, etc. As such they lose their identity and part of the benefit usually associated with processing does not materialize.

Lamb suffers from its small volume. It is relatively unimportant to retailers who depend on volume movement and rapid turnover to cover overhead costs and generate profits. Many retailers handle lamb only to fill out a complete line of fresh meats. It must, however, compete with other items for shelf space. Decisions regarding any one item necessarily affect others. This interdependence is expressed, for example, in policies regarding procurement, price specials, and advertising and promotion. Many firms have established policies of handling federally graded or private labeled major products and carry these policies over on lamb.

As noted above, the market for lamb is confined in large measure to the east and west coasts. Furthermore, demand is rather narrowly confined even within those regions. Based on overall averages, lamb appears to be a luxury meat catered to by higher income groups (table 5). Consumption per person in families having incomes above $10,000 in 1955 was more than four times as great as among families with incomes below $2,000. This is a greater income difference than shown for any other red meat. However, income may be associated with some of the other characteristics of consumers that eat large amounts of lamb.

TABLE 5.—*Quantity of meat used at home per person by urban households of various incomes, 1 week in spring 1955, United States* [1]

Income group	All red meat	Beef	Veal	Lamb and mutton	Pork
Under $2,000 pounds	2.76	0.95	0.06	0.06	1.23
$2,000 to $2,999 do	2.92	1.08	.08	.10	1.14
$3,000 to $3,999 do	2.96	1.19	.09	.10	1.10
$4,000 to $4,999 do	3.12	1.34	.12	.09	1.08
$5,000 to $5,999 do	3.33	1.47	.11	.14	1.13
$6,000 to $7,999 do	3.39	1.48	.11	.12	1.19
$8,000 to $9,999 do	3.20	1.50	.11	.14	1.00
$10,000 and over do	3.59	1.67	.14	.27	1.12
Percentage change over income groups	+30	+75	+133	+350	−9

[1] Excludes 1-person households.

Source: Harold F. Breimyer and Charlotte A. Kause, "Consumption Patterns for Meat," U.S. Department of Agriculture, AMS-249 (May 1958).

Price of lamb at retail

Price analysis showed that a 1-percent increase in lamb production leads to an estimated 0.4-percent decrease in retail prices of lamb.[3] The rather small price response follows from the characteristics of the product, the nature of the market, and the demand for lamb. It suggests that other economic forces are important in establishing lamb prices.

Statements about the price-consumption relationship for lamb rest on the assumption of stability of prices of substitutes. These prices do change, however, and they cause reactions in the lamb prices. Lamb competes with beef, poultry, and other meats, and it apparently competes at a disadvantage. When beef prices fall people appear to give up proportionately more lamb than poultry as they buy more beef. Similarly, when the price of poultry falls lamb appears to be given up faster than many of its substitutes.

This study indicates that beef supplies and prices appear to be more important than the supply of lamb in determining retail prices of lamb.[4] A 1-percent increase in beef production causes an estimated 0.6 percent decrease in lamb price. Institutional factors and trade practices account for some of this impact of supply of beef on price of lamb. Since both lamb and beef frequently are procured from the same supplier, small lamb volume may dictate purchasing both meats on the basis of beef price changes. Lamb often is handled both by processors and retailers as a convenience to the few customers who want it and to complete a line of red meat products. Beef is a volume item so retail merchandising, grading, and resale pricing policies of lamb must be keyed to beef merchandising policies and be competitive with beef.

High merchandising costs plus low volume combine to give lamb a low priority in obtaining retail shelf space. Lamb carcasses are small compared with beef so labor requirements are higher per pound

[3] Multiple correlation analysis was used in deriving the estimates in this section. Annual data for 1948–60 in the forms of first differences of logs were used. The price data had certain limitations. Carcass prices built from responses collected on a single desirable cut, leg of lamb, bias price response estimates. Prices collected only in major cities bias U.S. results because lamb consumption is concentrated in large west and east coast cities. Effects of retail price specials may bias price responses. This type of sale gives high computed elasticities that are difficult to evaluate because of the peculiar joint pricing and advertising policies involved.

It was hypothesized that skewed regional consumption results in differing regional demand responses. Attempts to quantify demand curves for California and New York State were statistically unsuccessful but suggested that such differences exist.

[4] This conclusion is consistent with the findings of Stanton, B. F., "The Effect of Beef on Lamb Prices at Retail," unpublished manuscript, U.S. Department of Agriculture.

for cutting and trimming lamb. Small sales of lamb per store do not yield economies in procurement and handling comparable with beef.

The movement of lamb does not seem to respond to a gradual lowering of retail prices as it does to a special sale because of the advertising and promotion, shock value, and bargain atmosphere that accompany a special sale.[5] The problem is similar for other commodities but few of them have as high a proportion of total sales made under special sales. Among the firms sampled two-fifths of all retail lamb sales were made as part of a special sale. Two-thirds of these firms ran a lamb special at least once every 2 months during which lamb sales often increased four to six times.

Price specials can serve many purposes. Those important in the observed lamb-pricing policies include the following:

1. Price specialing is a combination of competitive pricing and advertising strategies open to retailers selling many products. Prices are lowered on certain items chosen for the effects changes in their prices have on total sales of the store or a department within the store. Low or negative margins on special items are expected to be overcome by increased sales of items carrying normal markup.
2. Price specialing can be the result of a two-price policy based on price variations among markets. Differing short-run demand responses for a given commodity in adjacent time-separated markets (the same customer 4 weeks later, for example) require differing prices for profit maximization. Since the volume of the commodity specialed is increased substantially during a special and items are chosen for their low additional costs of handling, quite low markups can be profitable.[6] Lamb fits these requirements better than many other commodities because its perishability aids in separating markets in time. Leg of lamb is cut with relatively low labor costs per pound and the large size of the cut gives good tonnage.
3. Specialing is also a method of passing along to customers a decline in purchase price and a means of disposing of surplus inventory. A temporary, favorable purchase price can be passed along without affecting "normal" prices. It is a method sometimes used to introduce a declining market. The promotional or shock value of a very low price can be obtained without selling at a loss. In such cases, competitors frequently are specialing the same products so much of the competitive advantage is not realized.

Impacts of retail price specials on producers appear to be principally of two types: (1) Effects upon quantities demanded of various commodities, and (2) alteration of normal market flows and previous

[5] The perishability of lamb tends to stratify the annual supply. As a result short-run markets for lamb are time separated. Retail price specials tend to shift the short-run demand curves. Price responses are expected to vary from week to week, from month to month, and among geographically separated markets at any given time.

The concept of consumption response to price change is instantaneous. Empirical measurement of this response has conventionally used annual data primarily for statistical reasons. Such a timespan allows estimation of responses over a single production period which is reasonably consistent and may not differ from longrun responses. However, there is reason to expect that responses during adjacent short-run time periods differ when markets are relatively independent over time. Brandow, G. W., op. cit., pp. 32–35, found no difference between annual and long period responses but higher longrun responses were found by Nerlove, Marc, and Addison, William "Statistical Estimation of Long-Run Elasticities of Supply and Demand," Journal of Farm Economic, XL(4), November 1958, pp. 861–880, and Working, E. J., "Demand for Meat," Institute of Meat Packing, University of Chicago, 1954.

[6] Markup covering all costs is necessary in this case in order to make this policy profitable. Positive margins on special items are not necessary when the objective is to attract customers and recoup losses on high margin items.

bargaining relationships. Effects upon quantities demanded depend upon consumption responses to price changes of the commodity specialed and competing commodities. Changes in these responses, induced by promotion of special sales as well as normal response to greatly fluctuating prices, may result in fluctuations in supplies needed to satisfy demands. However, such effects may not occur unless a substantial part of the normal market is affected at a given time. In fact, without a concerted effort by a promoting group, specials run by competing retailers tend to balance out over large numbers and over time and to be cushioned by inventories so that fluctuations at retail may not be noticeable at the farm level.

The effect of specials on normal market flows and trade practices is difficult to measure. Balance of bargaining power is an elusive concept. By increasing quantities sold during specials, a retailer will purchase a far greater proportion of supply than regularly. Such volume purchases may result in large-scale procurement economies. The division of these economies between packers and retailers and ultimately between producers and retailers depends on the respective supply and demand conditions as well as on their market position. The effect of buying for a special sale is very different when there is a burdensome supply than when the supply is short. Long supplies are associated with price reductions and lead to buyers' markets but short supplies give sellers the advantage in bargaining. Large purchases for specials may even result in higher wholesale prices if supplies must be drawn from a wider area than normal market sources. By choosing among alternative items retailers can select specials from commodities in relatively large supply. This discretionary aspect of specialing gives retailers more flexibility than packers, particularly since regular retail prices will not sell a large part of the total lamb supply. However, the alternative to specialing is a uniform pricing policy accompanied by less promotion during the time lamb substitutes are promoted heavily.

Price of lambs at the farm

Prices received by farmers for lambs declined during 1959 and 1960 (fig. 3). This decline offset the rise during the previous 2 years and reached a 15-year low. Price changes each year since World War II, except one, have been inversely correlated with movements in quantity produced. Total commercial slaughter was halved between 1945 and 1951 while farm prices more than doubled. During 1959 and 1960 slaughter tonnage rose by two-fifths but never reached prewar levels. Prices dropped precipitously.

Per capita consumption of lamb declined between 1945 and 1951 and only a small part of the reduction has been recouped (fig. 2). The total annual consumption of lamb in recent years has been nearly constant in spite of a 1.7-percent annual population increase and a 2.3-percent annual increase in per capita income. Lamb prices have not reflected these upward pressures.[7] This is demonstrated in figure 3.

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[7] The net downward trend in the quantity of lamb demanded is estimated to be 2.8 percent per year. See Brandow, G. W., "Interrelationships Among Demand for Farm Products and Implications for Control of Market Supply," p. 23, table 2. University Park: Bul. 680, Pennsylvania State University, 1961.

In addition, a comparison of the price elasticities derived by Fox covering the 1922-41 period and those derived by Brandow for 1955-57 and this study covering 1948-60 suggest that the decline in per capita consumption may have caused a rise in the price elasticity of the demand for lamb. Such a response indicates that when the demand curve shifted to the left, its curvature was altered. See Fox, Karl, "Factors Affecting Farm Income, Farm Prices and Food Consumption," Agricultural Economics Research, vol. XII, No. 3, July 1951.

Three different times in recent years total lamb production has been as high as 758 million pounds. But prices associated with this level of production (as drawn) have been succeedingly lower. The farm price associated with production level of 758 million pounds of lamb declined from $21.90 in 1947 to $18.40 in 1955 and finally to $18 in 1959. Since this decline took place in a period of increasing population and income, this evidence strongly suggests a decline in demand for lamb over this period.

In recent years, prices for the less desirable cuts of breast, flank, and shanks have been tending downward while prices of leg of lamb have remained almost constant and prices for lamb chops have tended upward. Thus it appears that the decline in the demand for lamb has been a result of a decline in the demand for breast, flank, and shanks, and in spite of a constant or increasing demand for leg of lamb and loin cuts.

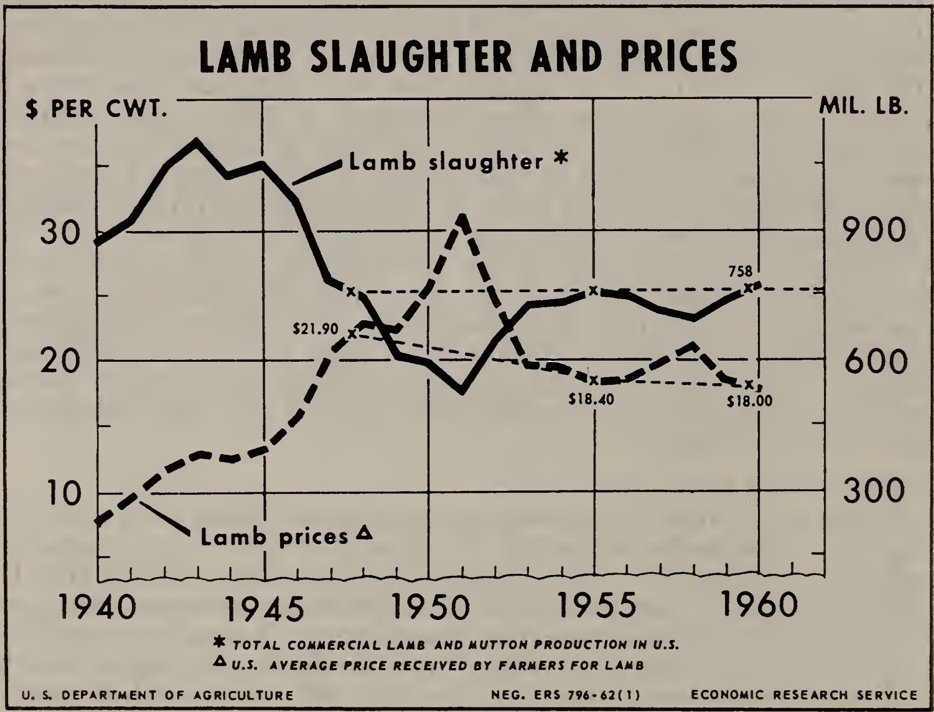

FIGURE 3

Prices received by farmers for lambs are more sensitive to quantity of lamb production than are retail prices.[8] But, production of other meats and consumer incomes continue strongly to influence lamb prices. Figure 4 shows the close relationship existing between prices received by farmers for beef cattle and lambs. Lamb prices were consistently above cattle prices before 1958 but have been below cattle prices since then. Large increases in lamb production and

[8] Multiple correlation analysis using first differences of logs was employed. A coefficient of determination of 0.97 was obtained using per capita consumption of beef and veal, pork and poultry, wool prices, and personal income as independent variables. Annual data for 1948–60 were used. A 1-percent increase in lamb slaughter was associated with 0.6 decline in the farm price of lambs, other things being equal. This leads to 1.7 as an estimate of farm price elasticity of demand which is consistent with other estimates. See Brandow, G. W., ibid. (p. 59, table 12), and Fox, K. A., ibid. (pp. 56–58).

other red meat and poultry products during this period and the continuing decline in demand for lamb apparently account for much of this change.[9]

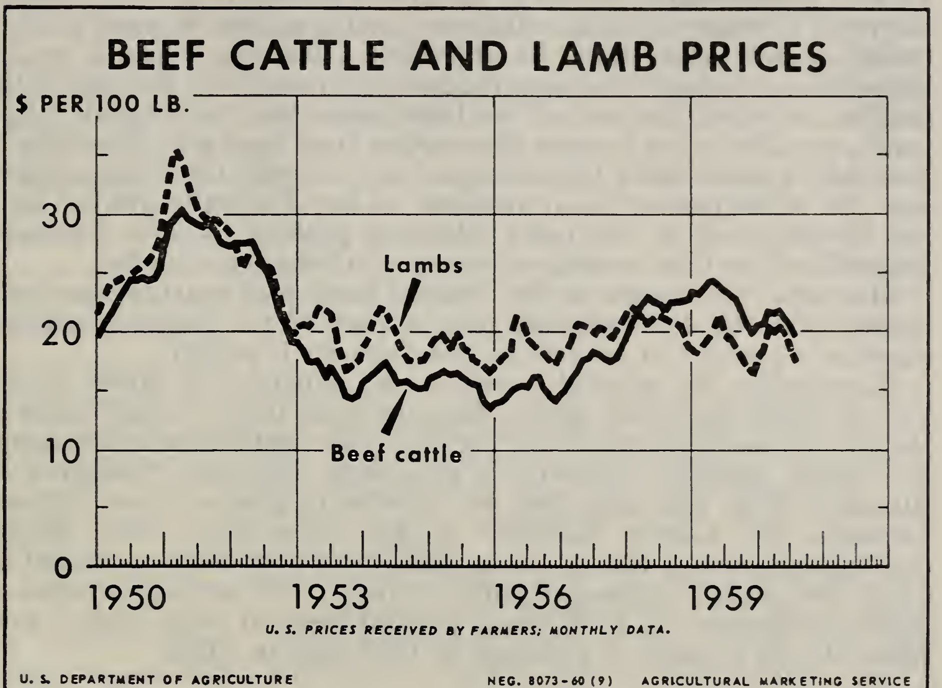

FIGURE 4

Lamb price changes during the last 5 years were closely approximated on the basis of changes in lamb production, prices of substitute products and consumer income. Estimated prices deviated from actual prices an average of $0.31 per year. Only for 1957 did the deviation exceed $0.50. Both the 1959 and 1960 prices were closely estimated in spite of the change in Federal grading standards that took place in March 1960.

EFFECTS OF FEDERAL GRADES

Price and production response

Price analysis suggests that market forces other than Federal grades were responsible for the big decline in lamb prices since 1958. This does not imply that Federal grades have no price effect. The price analysis used here is a rough statistical tool based on annual data. The fact that variations in lamb prices are rather closely approximated by factors in the pricing model narrows unexplained price changes but does not eliminate the possibility of price effects of Federal grades. These effects are not directly measurable by conventional price analysis. The most that can be said is that the range of the price effect of Federal grades is probably rather small

[9] Between 1957 and 1960 total commercial production of lamb rose 9 percent, pork 3 percent, poultry 19 percent, and beef 4 percent. Total red meat production increased 450 million pounds at the same time poultry production increased by 990 million pounds.

since other market forces apparently account for the bulk of observed price changes.

Since the use of Federal grades is voluntary, they are used only to the extent that it is profitable for the trade to do so. Because Federal grades enable buyers to get a more uniformly graded product, the price they are able and willing to pay for a given amount of Federally graded lamb may be increased. Because Federal grades expedite procurement and may reduce costs more than the cost of the grading, in effect, the cost of the lamb may often be reduced. As a result, retailers often request this service from packers. The offer of Federally graded lamb by some packers, initially the independents, and the willingness of many retailers to buy Federally graded lamb has forced many of the more reluctant packers to offer Federally graded lamb to their customers in order to hold their market.

Although the change in the Federal lamb and mutton standards made in March 1960 affected only a part of the lambs marketed, significant changes in production practices are expected.

Historically, the monthly commercial slaughter of lambs in the United States has been fairly constant, with only a small bulge in the fall and another in January (fig. 5). The pattern since the change in Federal grading standards is somewhat different. Slaughter in August of both 1960 and 1961 was one-fourth greater than 1959 and exceeded the August slaughter of any year since 1946. Earlier marketing indicates that more fat lambs are now being marketed directly from ranges instead of going on feed. The average weights of lambs slaughtered in 11 of the important western range States were lighter by an average of 2 pounds in 1960 than in 1959.

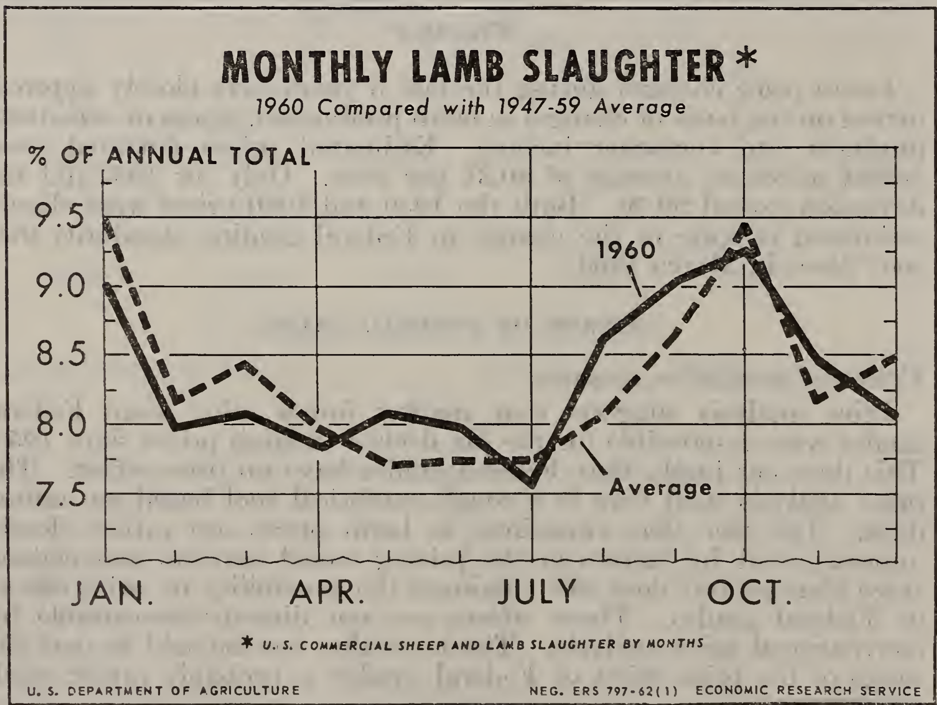

FIGURE 5

Of the lamb federally graded about 1 percent was U.S. Prime and 88 percent U.S. Choice in 1959.[10] In the months shortly after the change in grading standards about 18 percent was Prime and 75 percent Choice. In the summer and fall of 1961, however, Prime was fluctuating around 12 percent while about 85 percent was Choice. Since the price difference between Prime and Choice has been quite small, feeders are not expected to continue the expense of feeding large numbers of lambs to the Prime grade.

Evidence regarding changes in production practices is still inconclusive. The period has been too short. But the changes to date appear to be the beginning of expected trends. If so, returns to producers should be raised in the process. This would assume that the lamb trade is correct in its assessment of consumers' desires, and that Federal grades now more accurately reflect wants of lamb consumers.

Market competition

The use of Federal grades is one of the marketing techniques of the meat processing and distributing industry. But it is also a force altering the organization and competitive performance of the industry which has been highly concentrated in a few important firms. All packers using Federal grades gain equal access to the market in terms of product acceptability to buyers.

High concentration of business volume in the hands of a few firms is not enough to prove the absence of competition. On the contrary, on markets where a small number of major firms compete with each other on an equal basis for a limited supply, competition can be intense.

But such competition may not last over the long run. High concentration increases the possibility of policies which give the same result as collusion without the overt act. Firms learn that vigorous activity in the marketplace risks retaliation from important competitors. They learn what they can safely do. Under this type of competition, when firms anticipate the reactions of competitors to their own pricing activities, the net result may be market sharing with no collusion.[11] With few firms in the market, individual firms may be forced into this rational behavior pattern without being aware that the net result may be lower prices to farmers and higher prices to consumers.

However, the presence of a nationwide lamb market limits to individual market areas the distortion caused by this kind of competition and tends to restrict the range within which prices can be affected.

Federal grading helps the nationwide lamb market to become a more articulate and competitive pricing mechanism. It puts more buyers in contact with more sellers. Packers not large enough to establish their own brands enlarge their markets by selling on Federal grades. Federal grades improve the precision of market information programs. Farmers are informed of prevailing prices of specified qualities of lambs at various market points. Thus, Federal grades tend to narrow the range within which individual markets can differ from the national market price, in spite of the small number of buyers and sellers in a given market area.

[10] It should be noted that retailers selling lamb of lower than Choice seldom request Federal grading.

[11] Jesse W. Markham, "The Nature and Significance of Price Leadership." Amer. Econ. Rev. vol. XLI, 1951, 891, 905.

The wholesale lamb market is tied only loosely to the live market. Packer margins are not mere subtractions from the wholesale price or additions to the farm price. Rather, margins represent the difference between two separate (although interdependent) markets. These markets flex as supply and demand conditions change. While livestock sold in one market become the carcasses sold in the other, competition (or the lack of it) among packers and among retailers, between farmers and packers, and between packers and retailers, is the ultimate force determining the width of the margin. Wide margins (exceeding costs) stimulate additions to output and, if continued, lead to the entry of new firms in a given geographic market. Narrow margins result in contractions and exits.

Farmers do not automatically reap benefits from an increase in packers' efficiency and bargaining power, any more than packers automatically benefit from increased efficiency or bargaining power of retailers. Only when packers are bidding for scarce supplies will competition among them bring this result. Producers' benefits are not necessarily synonymous with packers' benefits. Packers can rationally be expected to widen their margin at the expense of either farmers or retailers, or both, whenever they are able.

The same logic is applicable to retailers. They pay the going wholesale price for lamb and sell it at prices consistent with competition. The retail margin is the resulting residual. However, this margin is varied sharply during special sales.

Techniques which can increase the competition in the marketing system are beneficial to both producers and consumers. Federal grades increase the competition among buyers, among sellers, and between buyers and sellers. In the long run Federal grades can help to prevent both packers and retailers from widening their margins at the expense of their suppliers and customers. They also tend to promote competition for live lambs. They help increase incomes of producers whose lambs are more desirable relative to incomes of those who produce less desirable lambs. These shifts increase producers' total income in the long run by raising the general quality of production in conformity with the wishes of consumers. Thus, Federal grades benefit certain segments of each level from the farm to the consumer.

CONCLUSIONS

The problems of the lamb industry stem from the nature of the demand for lamb and the structure of its market. Because few people eat lamb regularly, and some never do, lamb consumption is low. Increased competition from other meats and a downward trend in demand have led to lower prices for lambs in spite of decreased per capita production.

Sales volume of lamb for most retailers is small relative to other meats and lamb is somewhat more espensive to handle. Independent retailers catering to a specialized trade used to sell most of the lamb, but they are disappearing. An increasing share of lamb is sold by retail food chains.

Many retailers sell half their yearly volume of lamb during a few special sales. With only a part of annual supply salable at regular, higher prices, the market is quite dependent on special sales to move lamb into consumption. Even so, many retailers feel that specials

on lamb are less profitable and generate less total store sales than specials on other meats.

Some retailers go into the market to buy lamb in volume only when buying for a special. This places them in an advantageous bargaining position relative to packers at that time, even though the market is more concentrated at the packer level. This advantage depends both on the volume needed for the sale and the timing of it.

Producers are responsible for part of their problems. They want to get maximum returns from wool as well as high prices for meat. These objectives conflict because the market discounts for age and weight when wool-type lambs are overfed in pursuit of higher grades.

Under the revised grade standards, producers and feeders of western-type lambs were helped in marketing lambs lighter and with less excess finish. However, depreciating the Prime and Choice grades probably did not benefit native State producers of high quality lambs which met the older requirements for these grades. Nor is it likely to benefit feeders who will find that less of their services will be required as the industry adjusts to the grade change.

Favorable trade reaction is a response to the lower incidence of excess weight and finish within the total consist of the Choice grade. From the overall industry viewpoint, the case for or against the change in grades rests with the consumer. Will the lesser incidence of heavier and wastier cuts within the total supply in retail stores offset the lower quality requirements in the new Choice grade? Will the change help lamb regain a larger place in the consumer market for meat? Available evidence on these points is far from conclusive.

The net impact of Federal grading appears to be favorable for the industry. The consistent availability of lamb of a desired quality tends to increase consumer acceptance. By serving as product specifications, well-chosen Federal grades help the pricing mechanism translate consumer requirements into price incentives which guide production decisions. Federal grading lowers marketing costs by facilitating buying and selling. It also contributes to more competitive pricing at each level of trading in the marketplace.